What is claimed is:

1. A method for producing thin, foamed glass matrices (FGMs), comprising the steps of:

(a) preparing an initial mixture comprising at least one glass matrix-forming material and at least one solvent including a solvent for the glass matrix-forming material;

(b) evaporating bulk solvent from the mixture to obtain a syrup;

(c) exposing the syrup to a pressure and temperature sufficient to cause boiling of the syrup; and

(d) optionally removing the residual moisture.

2. The method according to claim 1, wherein the glass matrix-forming material is a stabilizing polyol.

3. The method according to claim 2, wherein the stabilizing polyol is a carbohydrate.

4. The method according to claim 3, wherein the carbohydrate is natural or synthetic.

5. The method according to claim 3, wherein the carbohydrate is chemically or enzymically modified.

6. The method according to claim 3, wherein the carbohydrate is selected from the group consisting of glucose, maltulose, iso-maltulose, lactulose and sucrose, maltose, lactose, isomaltose and sugar alcohols thereof, maltitol, lactitol, palatinit, a mixture of α-D-glucopyranosyl-mannitol, and α-D-glucopyranosyl-sorbitol, and its individual sugar alcohols, non-reducing glycosides of polyhydroxy compounds selected from sugar

alcohols, other straight chain polyalcohols, raffinose, stachyose, melezitose and dextran.

7. The method according to claim 3, wherein the carbohydrate is trehalose.

8. The method according to claim 1, wherein the solvent is aqueous.

9. The method according to claim 8, wherein the solvent is selected from the group consisting of biologically acceptable buffers.

10. The method according to claim 1, wherein the solvent is organic.

11. The method according to claim 10, wherein the solvent is selected from the group consisting of alcohols, ethers, oils, liquid hydrocarbons and derivatives.

12. The method according to claim 1, wherein the solvent is a combination of aqueous and organic solvents.

13. The method according to claim 8, wherein the solvent is present in an amount of about 5% to 95% by volume.

14. The method according to claim 1, wherein the evaporation in step (b) occurs at a temperature higher than ambient temperature.

15. The method according to claim 14, wherein the temperature is about 0°C to 90°C.

16. The method according to claim 14, wherein the temperature is about 15°C to 60°C.

17. The method according to claim 14, wherein the temperature is about 25°C to 45°C.

18. The method according to claim 1, wherein the evaporation in step (b) is under conditions sufficient to remove 5-95% of the solvent.

19. The method according to claim 1, wherein the evaporation during step (b) occurs at a pressure that is less than ambient.

20. The method according to claim 19, wherein the pressure is about 0.1 to 30 Torr/mm Hg.

21. The method according to claim 19, wherein the pressure is about 1 to 20 Torr/mm Hg.

22. The method according to claim 19, wherein the pressure is about 7.5 to 12.5 Torr/mm Hg.

23. The method according to claim 19, wherein the pressure is about 10 Torr/mm Hg.

24. The method according to claim 1, wherein conditions in step (c) are sufficient to cause boiling of the syrup.

25. The method according to claim 1, wherein the boiling in step (c) occurs such that a bubbled glass is formed.

26. The method according to claim 1, wherein the pressure during step (c) is about 0.01 to 30 Torr/mm Hg.

27. The method according to claim 1, wherein the pressure during step (c) is about 0.01 to 10 Torr/mm Hg.

28. The method according to claim 1, wherein the pressure during step (c) is about 0.01 to 0.5 Torr/mm Hg.

29. The method according to claim 1, wherein the pressure during step (c) is about 0.05 Torr/mm Hg.

30. The method according to claim 1, wherein the boiling during step (c) occurs at an external temperature above ambient temperature.

31. The method according to claim 1, wherein the temperature during step (c) is about 0°C to 80°C.

32. The method according to claim 1, wherein the temperature during step (c) is about 10°C to 60°C.

33. The method according to claim 1, wherein the temperature during step (c) is about 15°C to 45°C.

34. The method according to claim 1, wherein the FGM has a residual moisture content of about 0.1 to 12% (w/w).

35. The method according to claim 34, wherein the FGM has a residual moisture content of about 1 to 5% (w/w).

36. The method according to claim 1, further comprising the step of adding at least one additive during step (a) or (b).

37. The method according to claim 36, wherein the additive is at least one volatile salt.

38. The method according to claim 37, wherein the volatile salt is selected from the group consisting of ammonium acetate, ammonium bicarbonate, and ammonium carbonate.

39. The method according to claim 37, wherein the volatile salt is present in an amount from about 0.01 to 5 M.

40. The method according to claim 36, wherein the additive is at least one decomposing salt.

41. The method according to claim 40, wherein the decomposing salt is selected from the group consisting of sodium bicarbonate and sodium metabisulphite.

42. The method according to claim 36, wherein the additive is at least one volatile organic solvent.

43. The method according to claim 42, wherein the volatile organic solvent is selected from the group consisting of alcohols, ethers, oils, liquid hydrocarbons and derivatives.

44. The method according to claim 36, wherein the additive is a foam stabilizing agent.

45. The method according to claim 44, wherein the foam stabilizing agent is a viscosity modifier.

46. The method according to claim 45, wherein the viscosity modifier is guar gum.

47. The method according to claim 44, wherein the foam stabilizing agent is an amphipathic molecule.

48. The method according to claim 36, wherein the additive is an inhibitor of the Maillard reaction.

49. The method according to claim 1, further comprising adding a substance during step (a) or step (b).

50. The method according to claim 49, wherein the substance is a bioactive substance.

51. The method according to claim 50, wherein the bioactive substance is a cell or products thereof.

52. The method according to claim 50, wherein the substance is present in a therapeutically effective amount.

53. The method according to claim 50, wherein the bioactive substance is selected from the group consisting of pharmaceutical agents and biological modifiers.

54. The method according to claim 53, wherein the biological modifier is selected from the group consisting of subcellular compositions, cells, bacteria, viruses and molecules.

55. The method according to claim 54, wherein the molecules are selected from the group consisting of lipids, organics, proteins and peptides (synthetic and natural), peptide mimetics, hormones, D and L amino acid polymers, oligosaccharides, polysaccharides, nucleotides, oligonucleotides and nucleic acids, including DNA and RNA, protein nucleic acid hybrids, and small molecules and physiologically active analogs thereof.

56. The method according to claim 55, wherein the proteins are selected from the group consisting of enzymes, biopharmaceuticals, growth hormones, growth factors, insulin, monoclonal antibodies, interferons, interleukins and cytokines.

57. The method according to claim 50, wherein the substance is a vaccine.

58. The method according to claim 57, wherein the vaccine is selected from the group consisting of live and attenuated viruses, nucleotide vectors encoding antigens, live and attenuated bacteria, antigens, antigens plus adjuvants, and haptens coupled to carriers.

59. The method according to claim 50, further comprising the step of reconstituting the bioactive substance in a solvent.

60. The method according to claim 59, wherein the solvent is added in an amount to yield a therapeutically effective concentration of the active substance.

61. The method according to claim 59, wherein the solvent is a biologically acceptable buffer.

62. A method for stably incorporating at least one substance within thin, foamed glass matrices (FGMs) comprising the steps of:

(a) preparing an initial mixture comprising at least one glass matrix-forming material, at least one substance to be incorporated and at least one solvent including at least one solvent for the glass matrix-forming material and at least one solvent for the substance;

(b) evaporating bulk solvent from the mixture to obtain a syrup;

(c) exposing the syrup to a pressure and temperature sufficient to cause boiling of the syrup; and

(d) optionally removing residual moisture.

63. The method according to claim 62, wherein the solvent for the glass matrix-forming material and the solvent for the substance are the same solvent.

64. The method according to claim 62, wherein the solvent for the glass matrix-forming material and the solvent for the substance are different solvents.

65. A method for producing stable, dried, readily soluble single dosage of a bioactive substance, comprising the steps of:

(a) preparing a mixture comprising at least one glass matrix-forming material, the substance, and at least one solvent;

(b) evaporating bulk solvent from the mixture to obtain a syrup;

(c) exposing the syrup to a pressure and temperature sufficient to cause boiling of the syrup; and

(d) optionally removing residual moisture.

66. The method according to claim 65, wherein the solvent for the glass matrix-forming material and the solvent for the substance are the same solvent.

67. The method according to claim 65, wherein the solvent for the glass matrix-forming material and the solvent for the substance are different solvents.

68. The method according to claim 65, wherein the substance is present in a therapeutically effective amount.

69. The method according to claim 65, further comprising reconstituting the FRG in a suitable solvent.

70. A method for reconstituting a substance that is incorporated into thin, foam glass matrices (FGMs), comprising adding a suitable solvent to the FGMs in an amount sufficient to attain a desired concentration of the substance.

71. A composition comprising a thin, foamed glass matrix.

72. A composition comprising at least one substance incorporated into thin, foamed glass matrices (FGMs).

73. A composition obtainable by reconstituting the thin foamed glass matrices (FGMs) of claim 62.

74. The composition according to claim 73, wherein the substance is a bioactive substance.

75. A composition obtainable by reconstituting the thin, foamed glass matrices (FGMs) of claim 65.

76. A composition obtainable by the method according to claim 1.

77. A composition obtainable by the method according to claim 35.

add A19

add D17

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